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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,745	04/15/2004	Alfred Haeusler	TID-34858	7054

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EXAMINER	
ANYA, IGWE U	

ART UNIT	PAPER NUMBER
2891	

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/824,745	HAEUSLER ET AL.	
	Examiner	Art Unit	
	Igwe U. Anya	2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 7-15* is/are rejected.

7)☒ Claim(s) *4-6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/30/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claim is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "high purity" in claim 8 is a relative term, which renders the claim indefinite. The term "high purity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Appropriate correction required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 12, 14, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Joshi et al. (US Patent 6787879).

6. Joshi et al. teach a method of fabricating an integrated silicon-germanium heterobipolar transistor (Fig. 3B) wherein between a silicon-germanium base layer (320) and a silicon emitter layer (330) a silicon dioxide layer (324) is formed, characterized in that said silicon dioxide layer is formed by means of Rapid Thermal Processing (RTP) (col. 6 lines 63 – col. 7 line 15);

wherein the surface of said silicon germanium base layer is pre-cleaned and said silicon dioxide layer is subsequently formed in a single continual process (col. 6 lines 47 – 62); and

wherein an emitter layer is formed of polysilicon (col. 6 lines 47 – 62).

7. Claims 1 –3, 12, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Kameyama et al. (US Patent 5296388).

8. Kameyama et al. teach a method of fabricating an integrated silicon-germanium heterobipolar transistor (Figs 1 – 22) wherein between a silicon-germanium base layer (116) and a silicon emitter layer (114) a silicon dioxide layer (fig. 22 element 200) is formed, characterized in that said silicon dioxide layer is formed by means of Rapid Thermal Processing (RTP) for about 10 seconds (col. 11 line 22 – col. 12 line 49, & col. 20 lines 6 – 9);

wherein said silicon dioxide layer and said emitter layer are formed by means of a single continual process (col. 11 line 22 – col. 12 line 29); and

wherein said base layer is heated in a sequence of temperature steps to a process temperature at which said silicon dioxide layer is subsequently formed (col. 12 lines 20 – 29).

9. Claims 1, 11, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by. Schuegraf (US Patent 6459104).

10. Schuegraf teaches a method of fabricating an integrated silicon-germanium heterobipolar transistor wherein between a silicon-germanium base layer and a silicon emitter layer a silicon dioxide layer (314) is formed, characterized in that said silicon dioxide layer is formed by means of Rapid Thermal Processing (RTP) (Fig. 3B & col. 2 lines 1 – 35); and

wherein the silicon-germanium heterobipolar transistor is a pnp-bipolar transistor.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 7, 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kameyama et al. (US Patent 5296388) in view of Joshi et al. (US Patent 6787879).

14. Kameyama et al. teach the features previously outlined, but lack:

wherein said base layer is heated in a nitrogen atmosphere;

wherein said base layer is exposed to an oxygen-nitrogen atmosphere;

wherein the thickness or the silicon dioxide is between 0.3 and 0.4 nm; and

wherein the properties of said silicon dioxide layer are monitored during RTP.

15. However, Joshi et al. teach:

wherein said base layer is heated in a nitrogen atmosphere (col. 6 lines 64 – col. 7 line 15); and

wherein said base layer is exposed to an oxygen-nitrogen atmosphere (col. 6 lines 64 – col. 7 line 15).

16. Therefore , it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Joshi et al. into the Kamayema et al. reference to control the amount of oxidation. Monitoring properties during formation is conventional in the art. Regarding a thickness of 0.3 – 04. nm, where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

17. Claims 4 – 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. Prior art made of record and not relied upon, considered pertinent to applicant's disclosure include U'Ren (US Patent 6365479), Terpstra et al. (US Patent 6410395), and Okuno (US patent 5616515).

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William B. Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya
Examiner
Art Unit 2891

IA

September 30, 2005

B. WILLIAM BAUMEISTER
SUPERVISORY PATENT EXAMINER